



PHYSICS NMDCAT

TOPIC WISE TEST (UNIT-09)

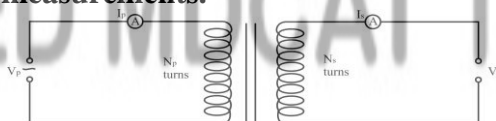
TOPICS:

✓ Electromagnetic Induction

- Q.1** The primary and secondary coils of a transformer are linked
 A. Electrically
 B. Magnetically
 C. Chemically
 D. Are not linked at all
- Q.2** If the secondary coil has N_s turns and the primary N_p turns, the relation between secondary and primary voltages is given by _____
 A. $V_s/V_p = N_p/N_s$
 B. $V_s/V_p = N_s/N_p$
 C. $V_p/V_s = N_s/N_p$
 D. $V_p/V_s = N_p/N_s$
- Q.3** Why does a transformer have a core made of iron
 A. Iron has a high melting point
 B. Iron is a conductor of electricity
 C. Iron is a conductor of heat
 D. Iron is a magnetic material
- Q.4** A step up transformer has transformation ratio of 3:2. What is the voltage in secondary if the primary voltage is 30 V?
 A. 20 V
 B. 60 V
 C. 45 V
 D. 15 V
- Q.5** Eddy currents are produced in a material when it is
 A. Heated
 B. Placed in a time varying magnetic field
 C. Placed in an electric field
 D. Placed in a uniform magnetic field
- Q.6** In a step up transformer the number of turns in
 A. Primary are less
 B. Primary are more
 C. Primary and secondary are equal
 D. Primary are infinite
- Q.7** Which of the following quantity remain same in the transformer?
 A. Current
 B. Frequency
 C. Voltage
 D. All of these
- Q.8** For long distance transmission, the transformer used is
 A. Step down
 B. Input voltage and output voltage remain same
 C. Step up
 D. Amplifier is used
- Q.9** Emf induced in a circuit according to Faraday's law depends on the _____
 A. Maximum magnetic flux
 B. Rate of change of Electric flux
 C. Change in magnetic flux
 D. Time rate of change of magnetic flux
- Q.10** A transformer is also called
 A. Static device
 B. Dynamic device
 C. Rotatory device
 D. None of these
- Q.11** Whenever the magnetic flux linked with a coil changes, there is produced an induced emf in the circuit. The emf lasts
 A. For a short time
 B. For a long time
 C. Forever
 D. So long as the change in flux takes place
- Q.12** When a magnet is moved with its north polarity towards a coil placed in a closed circuit, then nearer face of the coil
 A. Shows south polarity
 B. Shows sometimes south polarity
 C. Shows north polarity
 D. Shows sometimes south and sometimes north polarity
- Q.13** A copper ring having a cut such as not to form a complete loop is held horizontally and a bar magnet is dropped through the ring with its length along the axis of the ring. The acceleration of the falling magnet is
 A. g
 B. More than g
 C. Less than g
 D. Depends on the relative size of the cut



- Q.14** A step-up transformer is used on a 120 V line to provide a potential difference of 2400 v. If the primary coil has 75 turns, the number of turns in the secondary coil is
 A. 1500 B. 150
 C. 1200 D. 1575
- Q.15** In a loop of wire current is flowing in anticlockwise direction. It acts as
 A. North pole B. South pole
 C. Neutral D. May be north or south pole
- Q.16** The loss a power in transformer is due to
 A. Eddy current B. Magnetic hysteresis
 C. Resistance of coils D. All
- Q.17** An ideal transformer steps up or steps down
 A. Energy B. A.C voltage
 C. D.C voltage D. Power
- Q.18** Eddy Currents are
 A. Induced currents due to a changing magnetic field
 B. Induced currents due to high magnetic field
 C. Unstable currents in a conductor
 D. None of these
- Q.19** A transformer has 100 turns in primary coil and 200 turns in the secondary coil. If 200 V emf is induced in the secondary coil then the input emf is
 A. 2000 V B. 400000 V
 C. 400 V D. 100 V
- Q.20** The direction of induced current in a loop can be determine by
 A. Faraday's law B. Ampere's law
 C. Lenz's law D. Maxwell's laws
- Q.21** To construct a step-down transformer:
 A. $N_s < N_p$ B. $N_p < N_s$
 C. $N_s = N_p$ D. $N_s \cdot N_p = 1$
- Q.22** Which of the following statements is true of Faraday's laws of electromagnetic induction?
 A. Whenever magnetic flux linked with a circuit changes, induced e.m.f is produced.
 B. The magnitude of the induced e.m.f is directly proportional to the rate of change of the magnetic flux linked with the circuit.
 C. The induced e.m.f lasts as long as the change in the magnetic flux continues.
 D. All of the above
- Q.23** The transformation ratio in the step-up transformer is
 A. 1
 B. Less than one
 C. Greater than one
 D. The ratio greater or less than one depends on the other factors
- Q.24** The alternating voltage induced in the secondary coil of a transformer is mainly due to
 A. A varying electric field B. The vibrations of the primary coil
 C. A varying magnetic field D. The iron core of the transformer
- Q.25** In a laboratory experiment of test a transformer, a student used the circuit shown in the diagram to take measurements.



Two of the original entries in the student's result table are missing as shown:

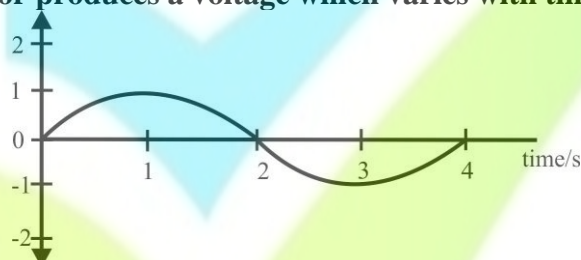
V_p/V	I_p/mA	N_p turns	V_s/V	I_s/mA	N_s turns
240	2.0	?	?	50	50

Assuming the transformer was 100% efficient, what are the missing results?

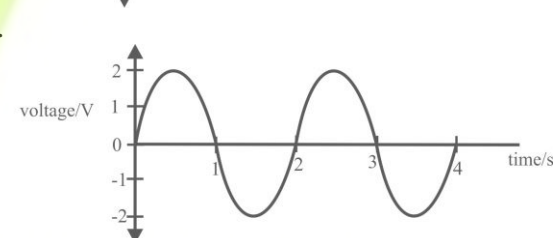
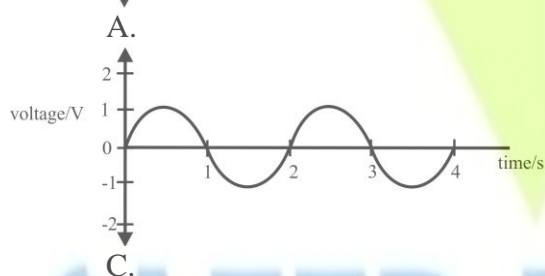
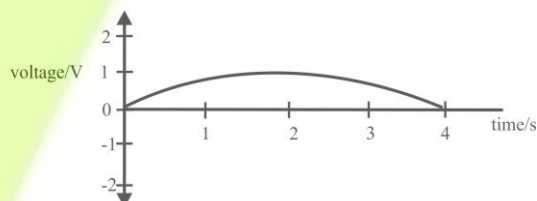
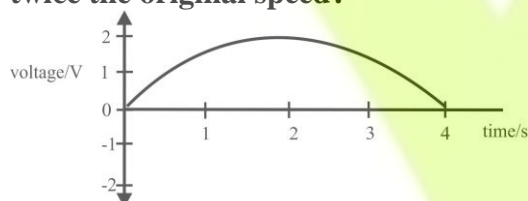
	N_p turns	V_s/V
A.	2	6000
B.	50	9.6
C.	480	1.0
D.	1250	9.6



- Q.26** Soft iron core in a transformer is used to reduce
 A. Eddy current losses
 B. Hysteresis losses
 C. Iron losses
 D. Heat losses due to resistance
- Q.27** A step-up transformer operates on a 230-volt line and supplies to a load of 2 amp. The ratio of primary to secondary windings is 1:25. Determine the primary current.
 A. 12.5 amp
 B. 8.8 amp
 C. 50 amp
 D. 25 amp
- Q.28** Transformer is based on the principle of
 A. Self-induction
 B. Eddy current
 C. Mutual induction
 D. None of these
- Q.29** In a transformer heat is produced due to eddy current in
 A. Primary coil
 B. Secondary coil
 C. Iron core
 D. All of these
- Q.30** A simple a.c generator produces a voltage which varies with time as shown.



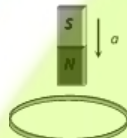
Which graph shows how the voltage varies with time when the generator rotates at twice the original speed?



- Q.31** To improve efficiency of transformer the flux coupling between primary & secondary coils should be
 A. Small
 B. Maximum
 C. May be small or may be maximum
 D. None of these
- Q.32** Induced current in a circuit depends upon
 A. Induced emf
 B. Speed of conductor
 C. Resistance of conductor
 D. All of these
- Q.33** Eddy currents can be decreased by
 A. Using a soft iron core
 B. Increasing the number of turns in primary
 C. Using laminated sheets for core
 D. All of these
- Q.34** The minimize Hysteresis loss in the core of a transformer which one of the following would you suggest for assembling the primary and secondary
 A. Copper
 B. Aluminum
 C. Iron
 D. Cobalt
- Q.35** The core of a transformer is laminated to reduce energy losses due to
 A. Eddy currents
 B. Hysteresis
 C. Resistance in winding
 D. None of these



- Q.36** In a transformer 220 ac voltage is increased to 2200 volts. If the number of turns in the secondary are 2000, then the number of turns in the primary will be
 A. 200 B. 100
 C. 50 D. 20
- Q.37** The primary winding of a transformer has 100 turns and its secondary winding has 200 turns. The primary is connected to an ac supply of 120 V and the current flowing in it is 10 A. The voltage and the current in the secondary are
 A. 240 V, 5 A B. 240 V, 10 A
 C. 60 V, 20 A D. 120 V, 20 A
- Q.38** The ratio of emf across primary coil to the emf across secondary coil is
 A. $\frac{N_s}{N_p}$ B. $\frac{I_s^2}{I_p^2}$
 C. $\frac{I_s}{I_p}$ D. None of these
- Q.39** Magnetic effect of current was discovered by
 A. Faraday B. Oersted
 C. Ampere D. Bohr
- Q.40** A metallic ring is attached with the wall of a room. When the north pole of a magnet is brought near to it, the induced current in the ring will be



- A. First clockwise then anticlockwise B. In clockwise direction
 C. In anticlockwise direction D. First anticlockwise then clockwise
- Q.41** A permanent magnet approaches a solenoid with a constant speed v . What is the magnetic pole induced at the portion Y of the solenoid and the direction of the induced current into the galvanometer?

A.

Polarity at Y	Direction of the current
N-pole	From the left

B.

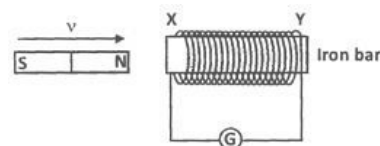
Polarity at Y	Direction of the current
N-pole	From the right

C.

Polarity at Y	Direction of the current
S-pole	From the left

D.

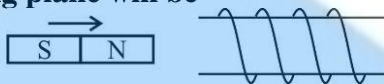
Polarity at Y	Direction of the current
S-pole	From the right



- Q.42** Which of the following statements is true of Faraday's laws of electromagnetic induction?
 A. Whenever magnetic flux linked with a circuit changes, induced e.m.f is produced.
 B. The induced e.m.f lasts as long as the change in the magnetic flux continues.
 C. The magnitude of the induced e.m.f is directly proportional to the rate of change of the magnetic flux linked with the circuit.
 D. All of the above
- Q.43** In a step up transformer, primary coil has 10 turns while secondary has 100 turns. A battery of emf 4.5V is connected to the primary of transformer. The voltages across secondary will be
 A. 4.5V B. 45V
 C. 0.45V D. Zero

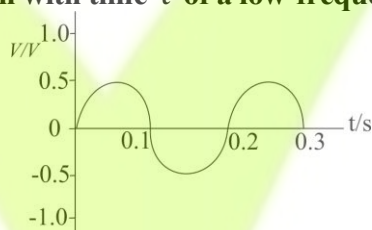


- Q.44** The north pole of a long horizontal bar magnet is being brought close to a vertical conducting plane along the perpendicular direction. The direction of induced current in the conducting plane will be



- A. Horizontal
B. Vertical
C. Clockwise
D. Anticlockwise
- Q.45** In step up transformer, voltage in the secondary increases and power in secondary
- A. Remain same
B. Increases because current decreases
C. Decreases because voltage increases
D. May increases if voltage remain same
- Q.46** A coil having 500 square loops, each of side 10 cm, is placed normal to a magnetic field which increases at the rate of 1.0T/s. The induced emf in volts is
- A. 0.1
B. 0.2
C. 0.5
D. 5.0
- Q.47** In an A.C circuit instantaneous current is $-I_0$ it is possible when $t = ?$
- A. $t = \frac{T}{2}$
B. $t = \frac{3T}{4}$
C. $t = \frac{T}{4}$
D. $t = T$

- Q.48** The graph shows the variation with time t of a low-frequency alternating voltage V .



Which expression is a representation of this voltage?

- A. $0.5\sin(0.4\pi t)$
B. $0.5\sin(10\pi t)$
C. $1.0\sin(0.2\pi t)$
D. $1.0\sin(10\pi t)$
- Q.49** A transformer steps down 200 volts to 22 volts to operate a device with a impedance of 220 ohm, then the current drawn from the mains by the primary of the transformer is
- A. 1 A
B. 0.01 A
C. 0.1 A
D. 0.001 A
- Q.50** If current flows from top towards bottom through a wire, then direction of lines of force would be:
- A. Parallel to the wire
B. Clockwise
C. Perpendicular to wire
D. Anti-clockwise

Chemistry

1 D	11 C	21 D	31 B	41 D
2 C	12 C	22 D	32 B	42 B
3 C	13 C	23 D	33 A	43 D
4 B	14 C	24 D	34 B	44 B
5 D	15 D	25 A	35 B	45 A
6 D	16 C	26 D	36 D	46 B
7 B	17 A	27 C	37 B	47 A
8 C	18 D	28 D	38 C	48 A
9 B	19 D	29 D	39 D	49 A
10 C	20 C	30 B	40 C	50 C

Physics

1 B	11 D	21 A	31 B	41 C
2 B	12 C	22 D	32 D	42 D
3 D	13 A	23 C	33 C	43 D
4 C	14 A	24 C	34 C	44 D
5 B	15 A	25 D	35 A	45 A
6 A	16 D	26 B	36 A	46 D
7 B	17 B	27 C	37 A	47 B
8 C	18 A	28 C	38 C	48 B
9 D	19 D	29 C	39 B	49 B
10 A	20 C	30 D	40 C	50 B